ALO--WWID-WIPP-1999-0007 Final Report

Occurrence Report

Waste Isolation Pilot Plant

(Name of Facility)

Nuclear Waste Operations/Disposal

(Facility Function)

Carlsbad Area Office Westinghouse Waste Isolation Div.

(Laboratory, Site, or Organization)

Name: xxxxxxx
Title: SURFACE OPERATIONS MANAGEMENT ASST. **Telephone No.:** (505)xxxxxxx

(Facility Manager/Designee)

Name: xxxxxxx
Title: SURFACE OPERATIONS MANAGEMENT ASST. **Telephone No.:** (505) xxxxxxx

(Originator/Transmitter)

Name: **Date:**

(Authorized Classifier (AC))

1. Occurrence Report Number: ALO--WWID-WIPP-1999-0007

FAILURE OF MONTHLY SHIFT TO FILTRATION OPERABILITY TEST

2. Report Type and Date: Final

	Date	Time
Notification:	11/10/1999	15:34 (MTZ)
Initial Update:	12/07/1999	08:55 (MTZ)
Latest Update:	12/07/1999	08:55 (MTZ)
Final:	12/30/1999	13:26 (MTZ)

3. Occurrence Category: Off-Normal

4. Number of Occurrences: 1 **Original OR:**

5. Division or Project: WIPP

6. Secretarial Office: EM - Environmental Management

7. System, Bldg., or Equipment: Underground Ventilation Filtration System

8. UCNI?: No

9. Plant Area: UG Ventilation

10. Date and Time Discovered: 11/10/1999 08:00 (MTZ)

11. Date and Time Categorized: 11/10/1999 09:30 (MTZ)

12. DOE Notification:

13. Other Notifications:

Date	Time	Person Notified	Organization
11/10/1999	08:05 (MTZ)	Facility Representative	DOE-CAO

14. Subject or Title of Occurrence:

FAILURE OF MONTHLY SHIFT TO FILTRATION OPERABILITY TEST

15. Nature of Occurrence:

01) Facility Condition
C. Safety Status Degradation

16. Description of Occurrence:

At approximately 1130 on November 9, 1999, Facility Operations Personnel attempted to perform the monthly operational test of the shift to filtration function of the underground ventilation system. This test failed when the Exhaust Filter Building isolation (inlet) damper failed to open.

17. Operating Conditions of Facility at Time of Occurrence:

In Waste Storage/Disposal Mode in underground.

18. Activity Category:

06 - Facility/System/Equipment Testing

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19. Immediate Actions Taken and Results:

At the time of the test failure, a normal tagout/lockout was in place, isolating control power to the 41-B-700C underground ventilation fan. The Facility Shift Manager (FSM) knew the location and nature of the tagout/lockout, and further knew this was the only abnormal plant condition existing at the time. The FSM assumed the deenergized control power was involved the the test failure in some way and directed that personnel working under the tagout/lockout place their work in a safe configuration so the tags could be cleared.

Engineering personnel were summoned to assist in a review of control logic diagrams associated with the shift-to-filtration test circuit. A review of the drawings was completed at approximately 1345 and confirmed that the deenergized control power to the 700C fan did in fact create a condition which effectively disabled the shift-to-filtration function of the ventilation system.

After clearing the tags and reenergizing the fan 700C control power, the shift-to-filtration function was tested again at approximately 1530. This test confirmed the function was operational as the ventilation system properly shifted into filtration mode.

The system has remained in an operable condition and a thorough evaluation of the event was begun to determine if an Unreviewed Safety Question existed.

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20. Direct Cause:

4) Design Problem
B. Inadequate or Defective Design

21. Contributing Cause(s):

22. Root Cause:

4) Design Problem
B. Inadequate or Defective Design

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23. Description of Cause:

As the underground ventilation electrical control system was originally designed and installed, deenergizing control power to any one of the three normal underground ventilation fans creates a condition which disables the shift-to-filtration function of the underground ventilation system. The original electrical systems designers apparently did not relate this interconnection of control functions to a potential limitation in operational flexibility. Having had no previous experience with this problem, current Operations and Engineering personnel were generally unaware of this feature of the electrical controls.

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24. Evaluation (by Facility Manager/Designee):

The WIPP Safety Analysis Report (SAR) establishes that the underground ventilation system shift-to-filtration function supports the "defense in depth" philosophy, and is not defined as a "safety SSC". The WIPP Technical Safety Requirements document (TSR) states that if a Defense-In-Depth SSC fails to operate or becomes unavailable during Waste Handling operations, those operations shall be stopped and the facility placed in the Waste Storage/Disposal Mode. Further, when in Storage/Disposal Mode, no specific requirements are identified in the event of Defense-In-Depth SSC failures, other than to initiate corrective actions in a timely manner.

Until the USQ evaluation had been completed and determined that a USQ did not exist, the Facility Manager directed that waste handling, scheduled to begin at 0800 on November 10, be placed on hold. The underground remained in Waste Storage/Disposal Mode. That USQ evaluation was completed at approximately 1030 on November 10, 1999. After this confirmation that a USQ did not exist, Waste Handling Mode was again established in the underground. This self-imposed delay of waste handling operations lasted for approximately 2 1/2 hours. This facility operations delay meets the requirements of ORPS criteria 1.C.ON(1). This delay has no appreciable effect of the overall facility schedule and no effect whatever on waste receipt schedules.

A standing Shift Instruction was written, prohibiting tagout/lockout of the control power for any of the three normal underground ventilation fans unless the facility is first placed in the Waste Storage/Disposal Mode. The review of circuit design shows that this unexpected condition (disabling shift-to-filtration functions) exists with loss of control power to any one of the fans. This apparent circuit design flaw had never been noted before this event wherein a deenergized fan control power circuit and the monthly functional test were coincidental.

Engineering analysis is ongoing, with the goal of defining a technically valid change in circuit design which will allow the control power to be deenergized to any of the fans, and still maintain operability of the shift-to-filtration system.

UPDATE CONCURRENT WITH FINAL REPORT SUBMITTAL: Engineering personnel have identified a simple change in circuit design which will eliminate this problem. An Engineering Change Proposal and Change Order have been prepared, evaluated, and approved to install a key-operated switch in the control circuit. When operated, this switch will bypass a contactor and allow the shift-to-filtration function to operate as designed when control power to any of the fans has been deenergized.

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25. Is Further Evaluation Required?: No

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26. Corrective Actions

(* = Date added/revised since final report was approved.)

1. Identify a technically valid change in circuit design which will allow the control power to be deenergized to any of the fans and still maintain operability of the shift-to-filtration system.

Target Completion Date: 12/06/1999	**Completion Date:** 11/23/1999

2. Implement design changes required to ensure shift-to-filtration function operability when control power to a fan is deenergized.

***Target Completion Date:** 03/15/2000	**Completion Date:**

3. Issue necessary operating procedure changes to address new circuit design. Cancel existing standing order which prohibits deenergizing fan control power unless the facility is in the Waste Storage/Disposal Mode.

***Target Completion Date:** 03/17/2000	**Completion Date:**

27. Impact on Environment, Safety and Health:

None

28. Programmatic Impact:

None

29. Impact on Codes and Standards:

None

30. Lessons Learned:

None

31. Similar Occurrence Report Numbers:

1. None

32. User-defined Field #1:

33. User-defined Field #2:

34. DOE Facility Representative Input:

Overall, the M&OC's response, root cause analysis, evaluation and corrective actions changes planned or taken to implement design and procedure changes to ensure operability of shift-to-filtration function described are reasonable.

Entered by: xxxxxxx Date: 12/30/1999

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35. DOE Program Manager Input:

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36. Approvals:

Approved by: xxxxxxx, Facility Manager/Designee
Date: 12/07/1999
Telephone No.: (505) xxxxxxx

Approved by: xxxxxxx, Facility Representative/Designee
Date: 12/30/1999
Telephone No.: (505) xxxxxxx

Approved by: Approval delegated to FR
Date: 12/30/1999
Telephone No.:
